

# The Future of Mobility in the Urban Context



SUSAN ZIELINSKI  
Health Effects Institute  
Annual Conference  
Alexandria, Virginia.  
April 30, 2017



# The Most Revolutionary Transport Innovation



Wheel  
Horse  
Dirigible  
Steam Train  
Plane  
Rocket  
Bicycle  
Dirigible  
Steam ship  
Bus Rapid Transit  
Subway  
Jet Pack  
Other?

# *The* JETSONS





# **The BUZZ / Poster Children These Days:**

(where attention + funds are going)

Self Driving Cars  
Connected / Automated / Drones  
Shared Use  
Technology / Big Data / Apps  
Electrification  
Other?

Transportation is  
transforming  
just about  
everywhere

# MOBI PLATFORM



# WhereIsMyTransport, South Africa





## Avego Ride Sharing Technology, Ireland



[mobiprize.com](http://mobiprize.com)



**Zagster provides bicycle sharing systems for the world's leading businesses and institutions. We design, build, and operate solutions to fit your organization's unique needs and provide a great rider experience.**



# UBER Global



WANT TO DRIVE WITH UBER?

BECOME A DRIVER



≡ MENU

U B E R

LOG IN

SIGN UP

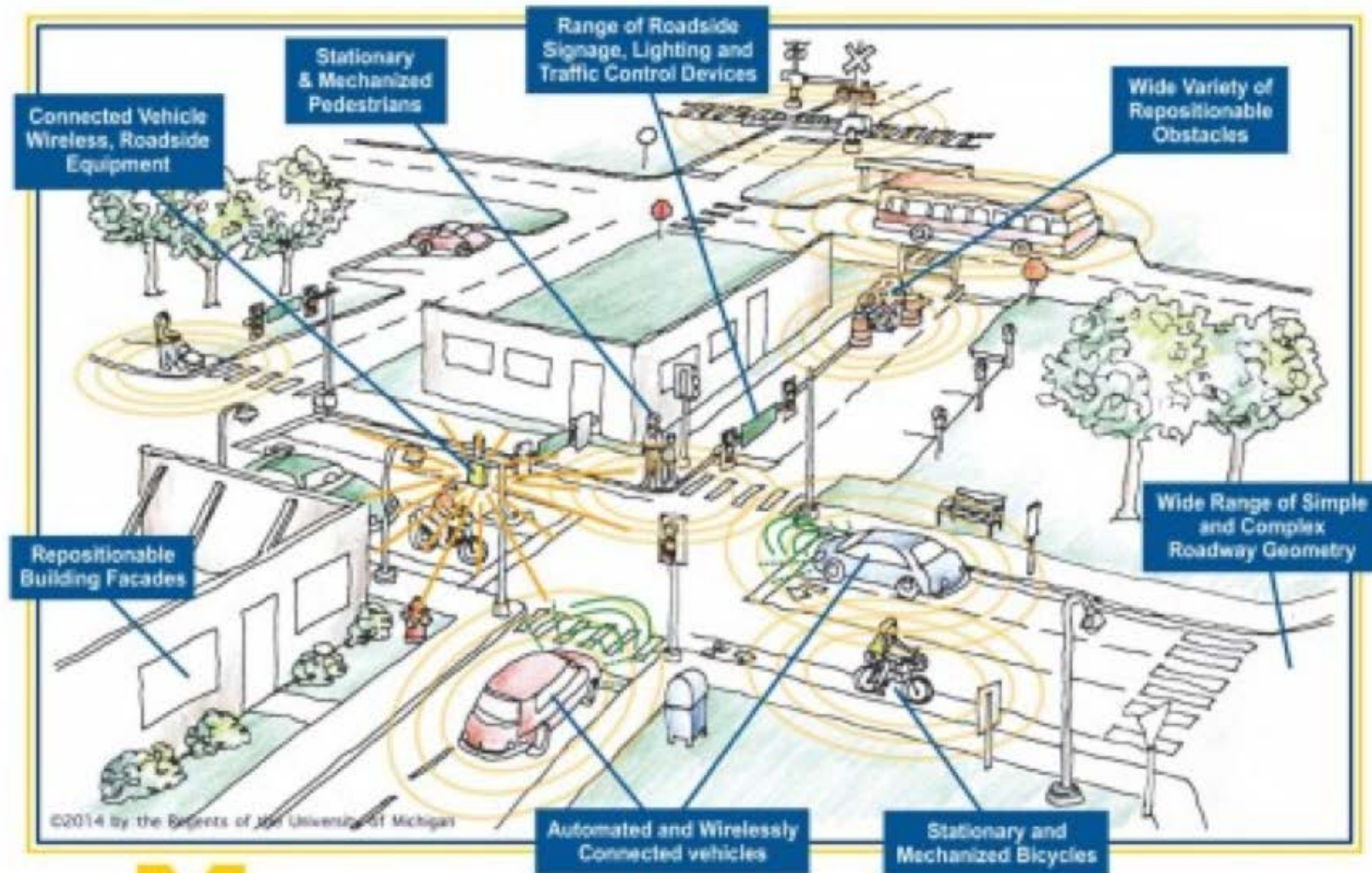
## YOUR RIDE, ON DEMAND

TRANSPORTATION IN MINUTES WITH THE UBER APP

SIGN UP



# MCITY Connected & Automated Vehicles Ann Arbor USA





Chair Lift in Rio

# MellowCabs, South Africa





# Priyadarshini Taxi Service, India





Bikes On Buses in Bage Rio Grande Do Sul

## Eco-Cabs Dial-a-Rickshaw, India



[mobiprize.com](http://mobiprize.com)



# Roadify, USA

## Roadify Text Service



[mobiprize.com](http://mobiprize.com)

# Hangzhou Omnipay, China

Winner



[mobiprize.com](http://mobiprize.com)



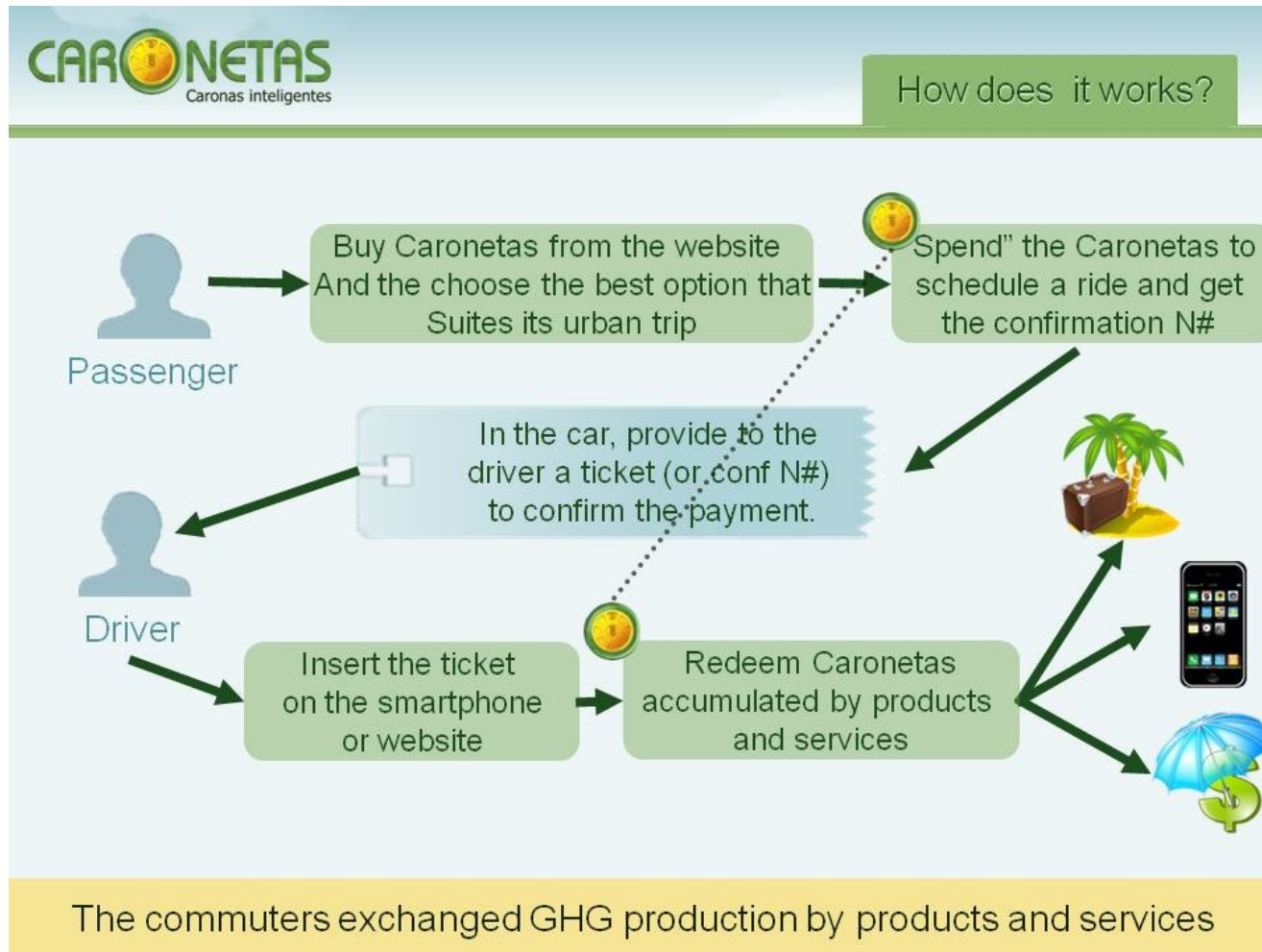
A transit revolution fighting for a connected Detroit. "Biofuel-powered transit with a healthy shot of uncommonly good customer service."

THE  
*Detroit*  
BUS COMPANY



# Caronettas, Brazil

Winner



[mobiprize.com](http://mobiprize.com)

# MISTER Guideways, New Zealand, Poland



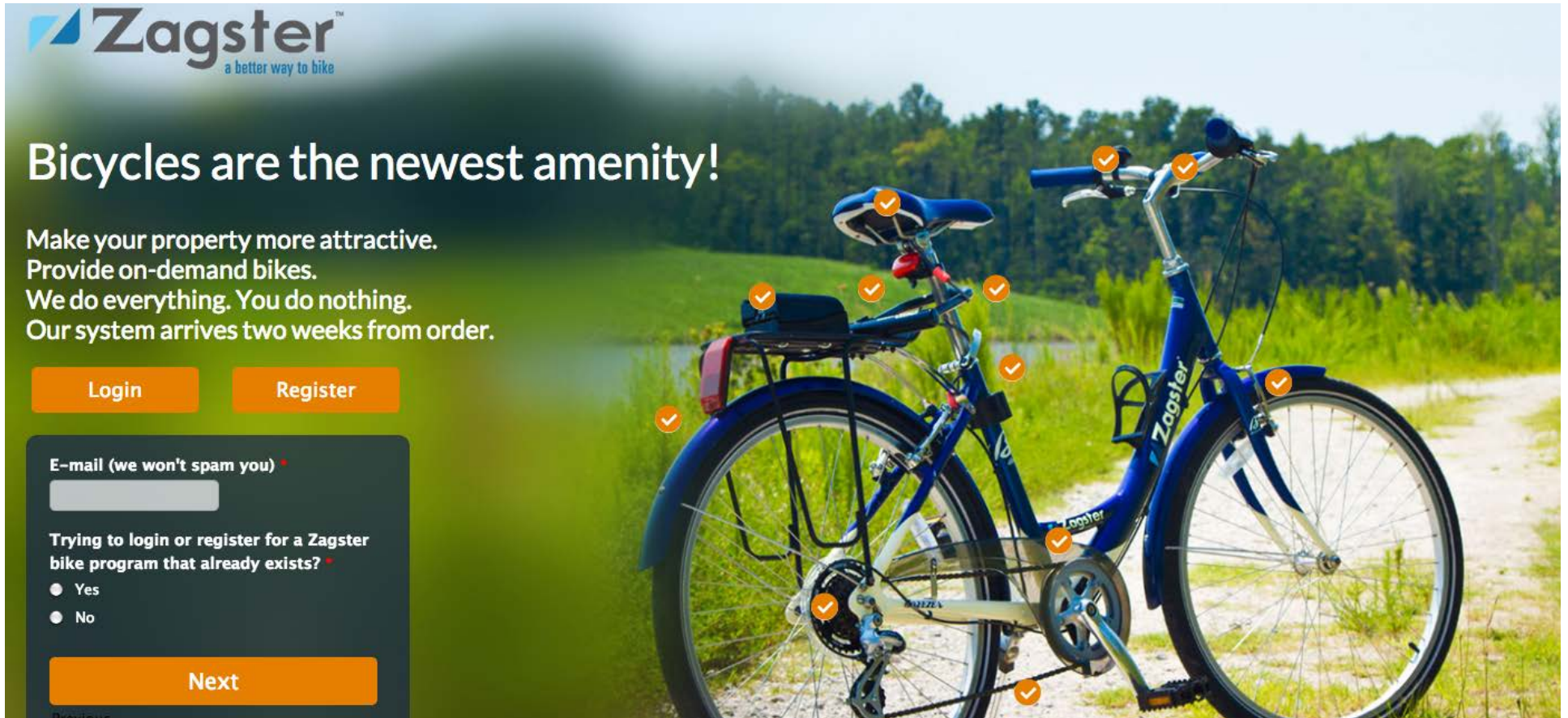
[mobiprize.com](http://mobiprize.com)





## Electric Tricycles in Blumenau Shopping Centers

# City Ryde Zagster, USA

The image shows a blue Zagster bicycle parked on a dirt path next to a body of water. The bicycle has several orange checkmarks placed on its various parts, including the handlebars, seat, rear rack, front fender, and wheels. The background is a scenic view of a lake and green hills under a clear sky.

**Zagster**  
a better way to bike

## Bicycles are the newest amenity!

Make your property more attractive.  
Provide on-demand bikes.  
We do everything. You do nothing.  
Our system arrives two weeks from order.

Login Register

E-mail (we won't spam you) \*

Trying to login or register for a Zagster bike program that already exists? \*

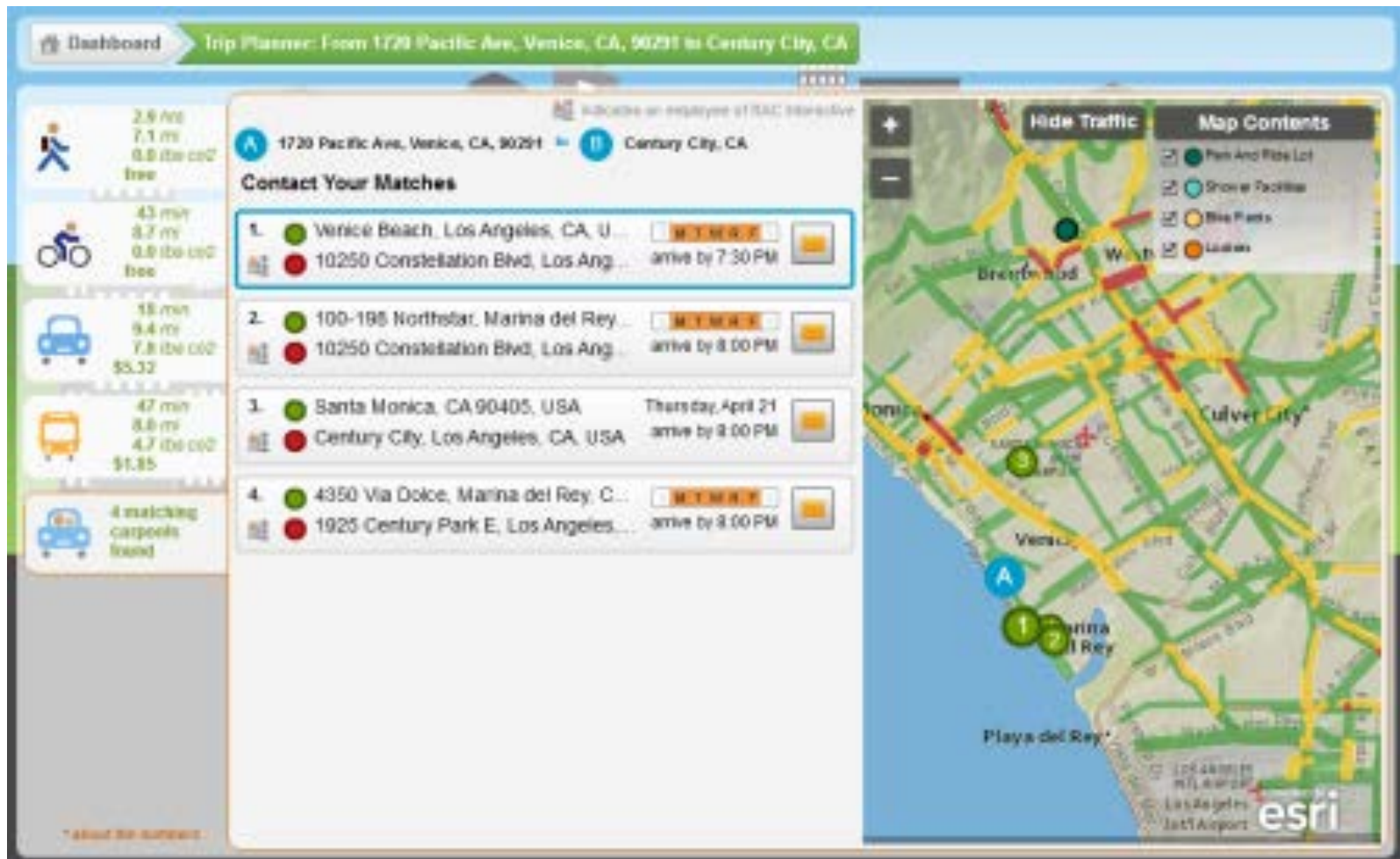
- Yes
- No

Next

mobiprize.com



## Ride Amigos Commute Optimization, USA



mobiprize.com

## Rising Pheasant Farms Urban Farming & Sustainable Delivery, USA



[mobiprize.com](http://mobiprize.com)

**SMART**  
Sustainable Mobility & Accessibility  
Research & Transformation  
UNIVERSITY OF  
MICHIGAN



# Getaround Car Share, USA

The screenshot displays the Getaround website interface. At the top, a dark banner contains the text "Rent a car from someone nearby." and "Convenient hourly rentals. Full insurance included." To the right of this banner is a blue button with a Facebook 'f' logo and the text "Join for free". Below the button, it says "One friend uses Getaround." with a small Facebook icon. The main content area features four car listings, each with a photo of the car, a profile picture of the owner, the car's name, the owner's name, location, and hourly rate.

Car Name	Owner Name	Location	Hourly Rate
MINI Cooper	yeti	San Francisco, CA	\$8.50 / hour
Tesla Model S	ModelS	San Francisco, CA	\$25.00 / hour
MINI Cooper	pluto	San Francisco, CA	\$8.50 / hour
Porsche Cayenne	midnightmarina	San Francisco, CA	\$9.50 / hour

mobiprize.com





Federal District 235 more kilometers of bike lanes

Dr. AM Speradio, Faculdade Jaguariuna

## Tuk Tuk Factory Electric Shuttles, Netherlands



[mobiprize.com](http://mobiprize.com)

# GoMetro, South Africa





# Pocket-sized personal transporters could soon be seen on the streets of Tokyo

by [SMART](#) on August 7, 2015 in [Innovations \(InspireMobility\)](#), [News from the Field](#), [Videos](#)



# Jayride Spare Capacity, Australia



[mobiprize.com](http://mobiprize.com)

# DATA DRIVEN DETROIT



Provides accessible, high-quality information and analysis to drive informed decision-making in Detroit.





**Ford's definition of Mobility:**  
Accessibility for people, goods and services to go where they need or want safely, efficiently and affordably – providing a simplified and fun customer experience. Our goal is to make mobility affordable in every sense of the word – economically, environmentally and socially.

By 2050 we will have a true network of mobility solutions, and automobiles will likely look very different from how they look today.



# Zambikes, Zambia

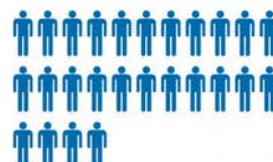
Winner



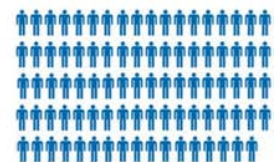
1 Zambulance =  
\$1,000



1 Zambulance = 1  
life saved every 2  
weeks



\$1,000 = 26 lives  
saved per year

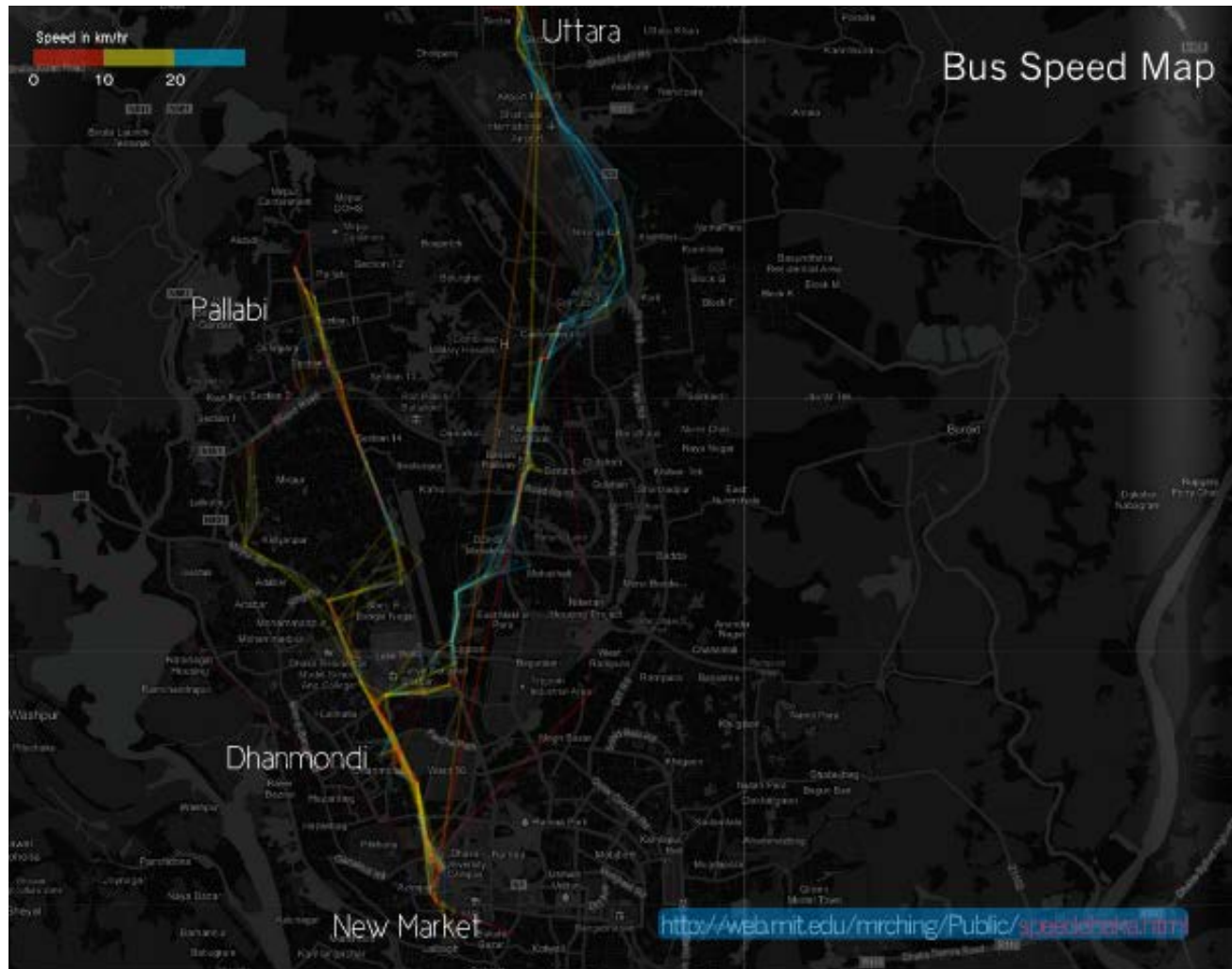


5 Years = 130 Lives  
Saved

[mobiprize.com](http://mobiprize.com)

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## Flocksourcing Buses, Bangladesh



mobiprize.com



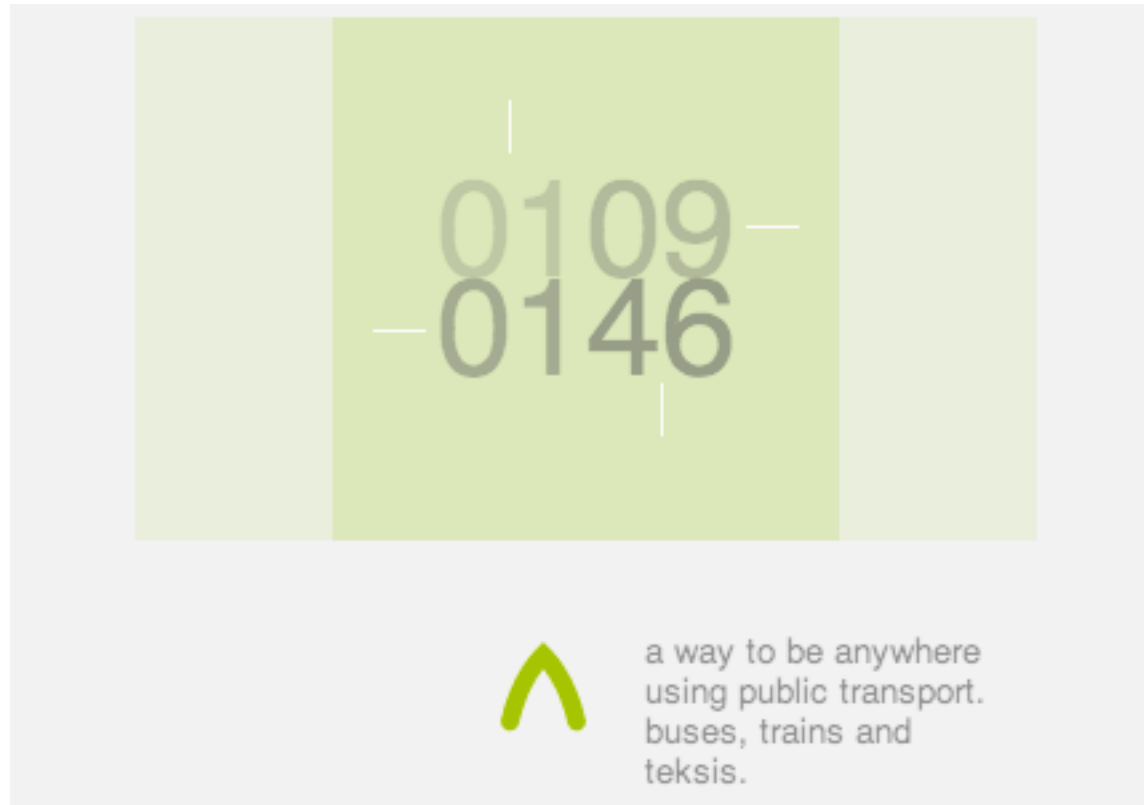
# AUTOLIB PARIS





Banking Boat in Manaus

# A Way To Be, South Africa





# PHD: Party Hard Drivers, India

## If You Party, Party Right. Get A PHD Tonight!

Our uniformed drivers are reliable, professional, trained and capable of driving all cars. Our services are reasonably priced so you no longer need to worry about how to get home after a couple of drinks.



**1** Call **7738087500**  
to book your driver.  
(Between 12 p.m. and 12 a.m.)



**2** Driver reaches your  
destination.  
Hand him your keys.





**3** Drink responsibly  
and party hard.



**4** Get driven home  
safe and problem  
free!



Drinking and Driving is dangerous for health

License To Party    

# The Green Cab, South Africa





# Buenos Aires Launches Automated Bike Share

March 3, 2015





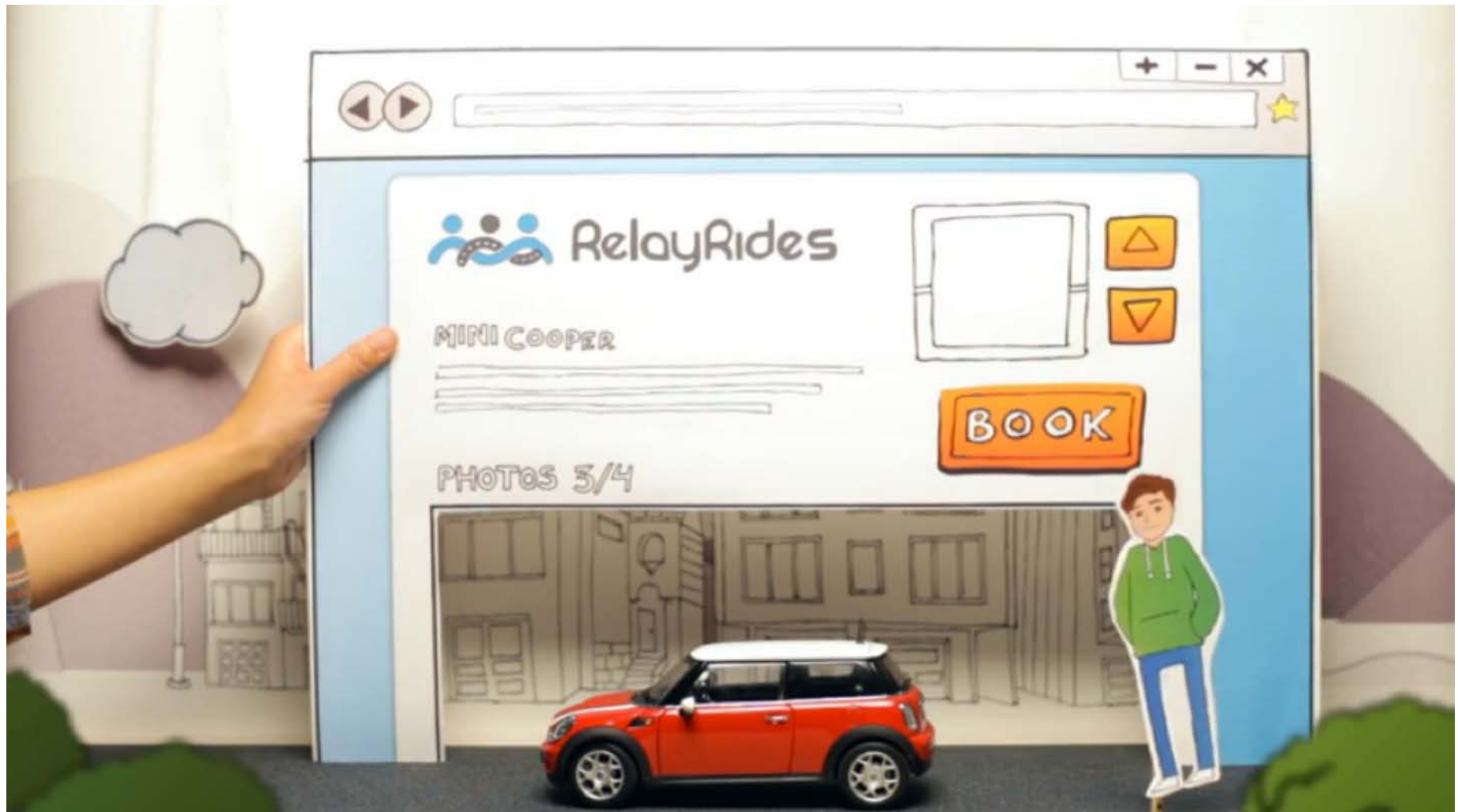


Tapajos  
River

Health  
Care  
On  
Boats  
  
(Floating  
Hospital)



## Relay Rides Peer to Peer, USA



[mobiprize.com](http://mobiprize.com)

# Ideophone Apps, India

just launched



TripThirsty



introducing



the smart wake-up alarm

[mobiprize.com](http://mobiprize.com)



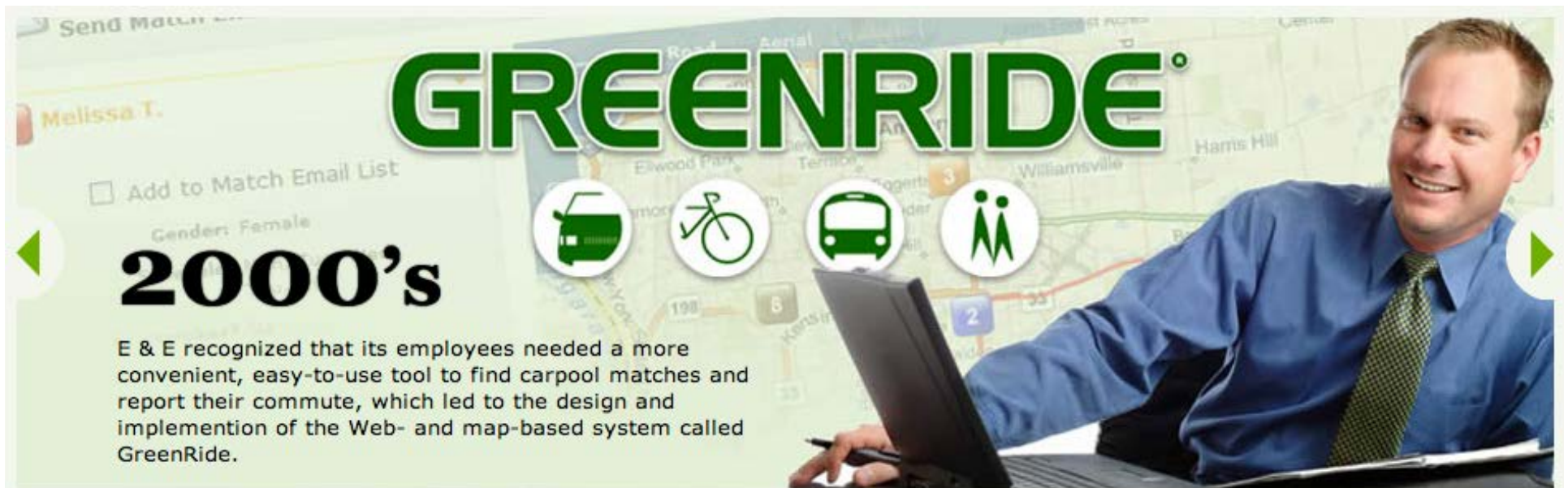
# Cabcorner Taxi Platform, USA



[mobiprize.com](http://mobiprize.com)

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## Greenride Mobility Management, USA



**GREENRIDE®**

**2000's**

E & E recognized that its employees needed a more convenient, easy-to-use tool to find carpool matches and report their commute, which led to the design and implementation of the Web- and map-based system called GreenRide.

[mobiprize.com](http://mobiprize.com)

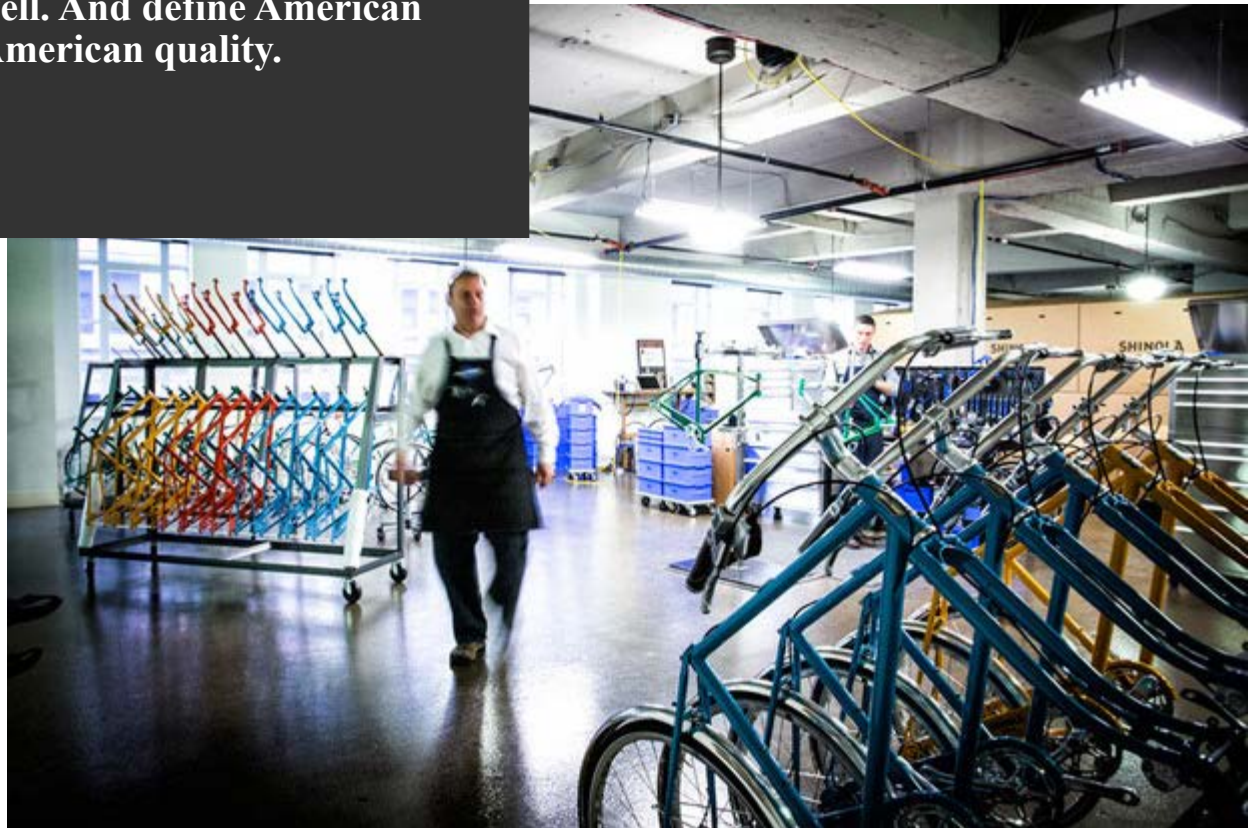
Detroit Labs is a team of thinkers, doers, and makers.  
We dream up and ship beautiful, intuitive apps.



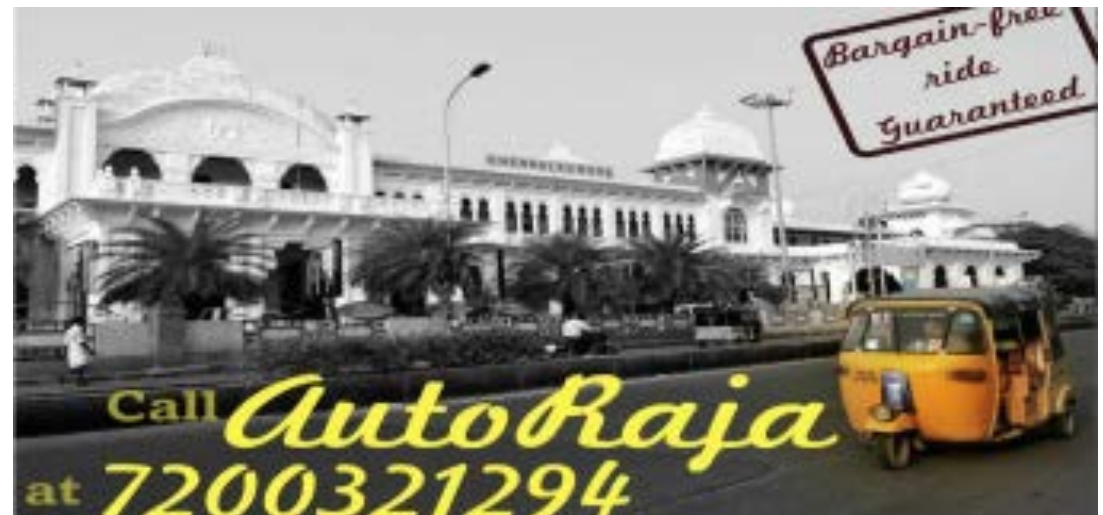


A luxury goods maker located in Detroit creating a community that will thrive through excellence of craft and pride of work. Where we will reclaim the making of things that are made well. And define American luxury through American quality.

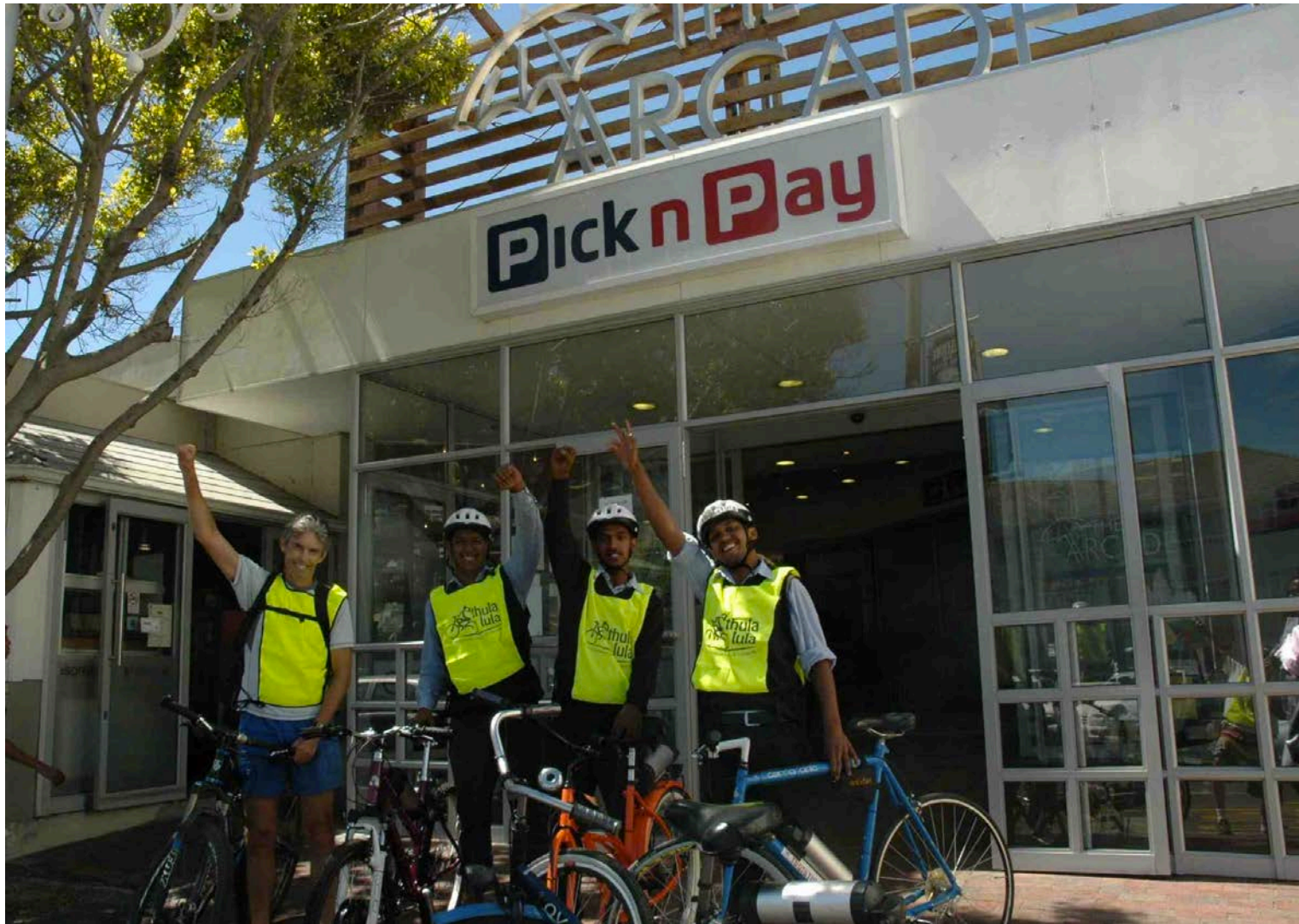
**SHINOLA**  
DETROIT



## MindHelix, India

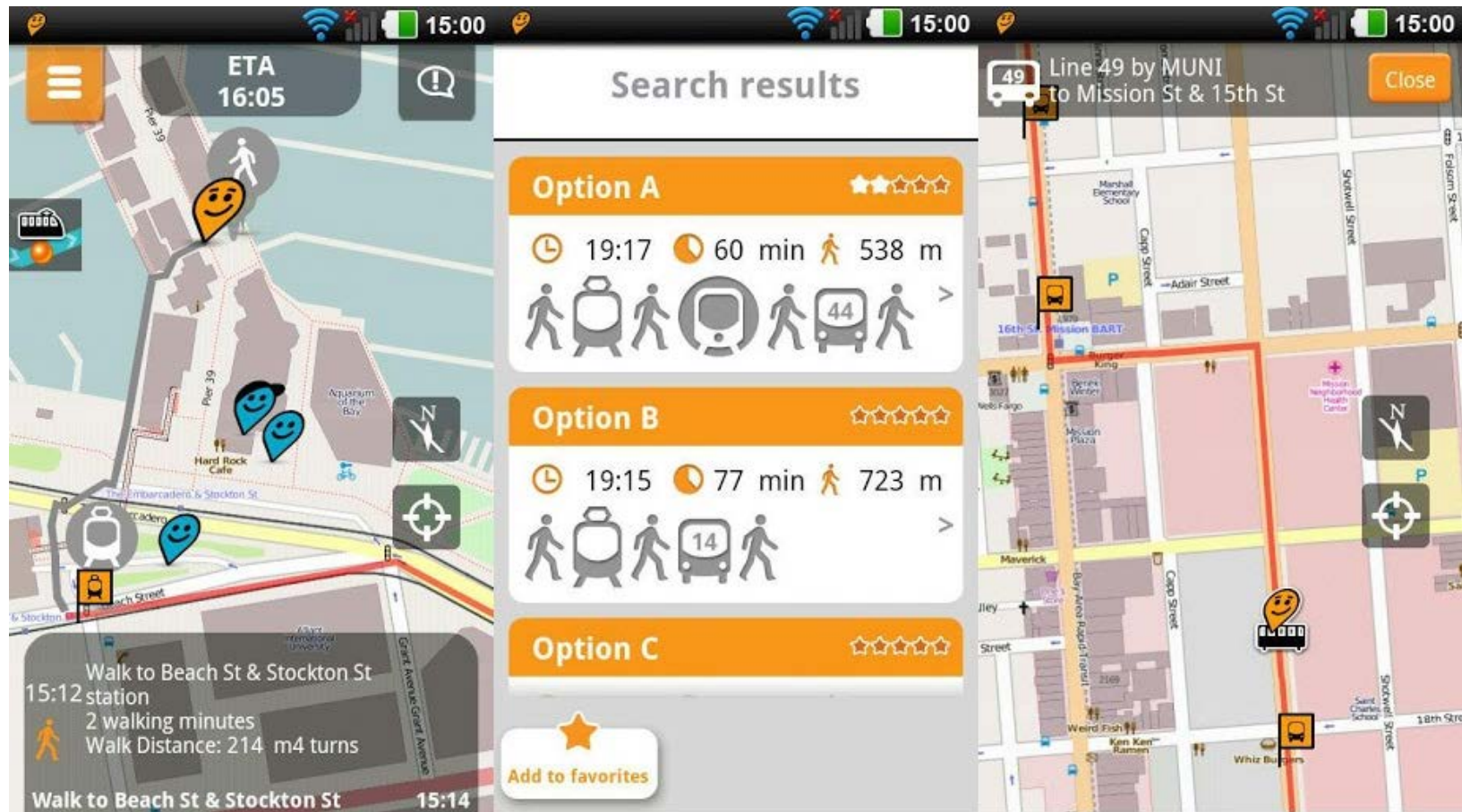


# Thula Lula, South Africa

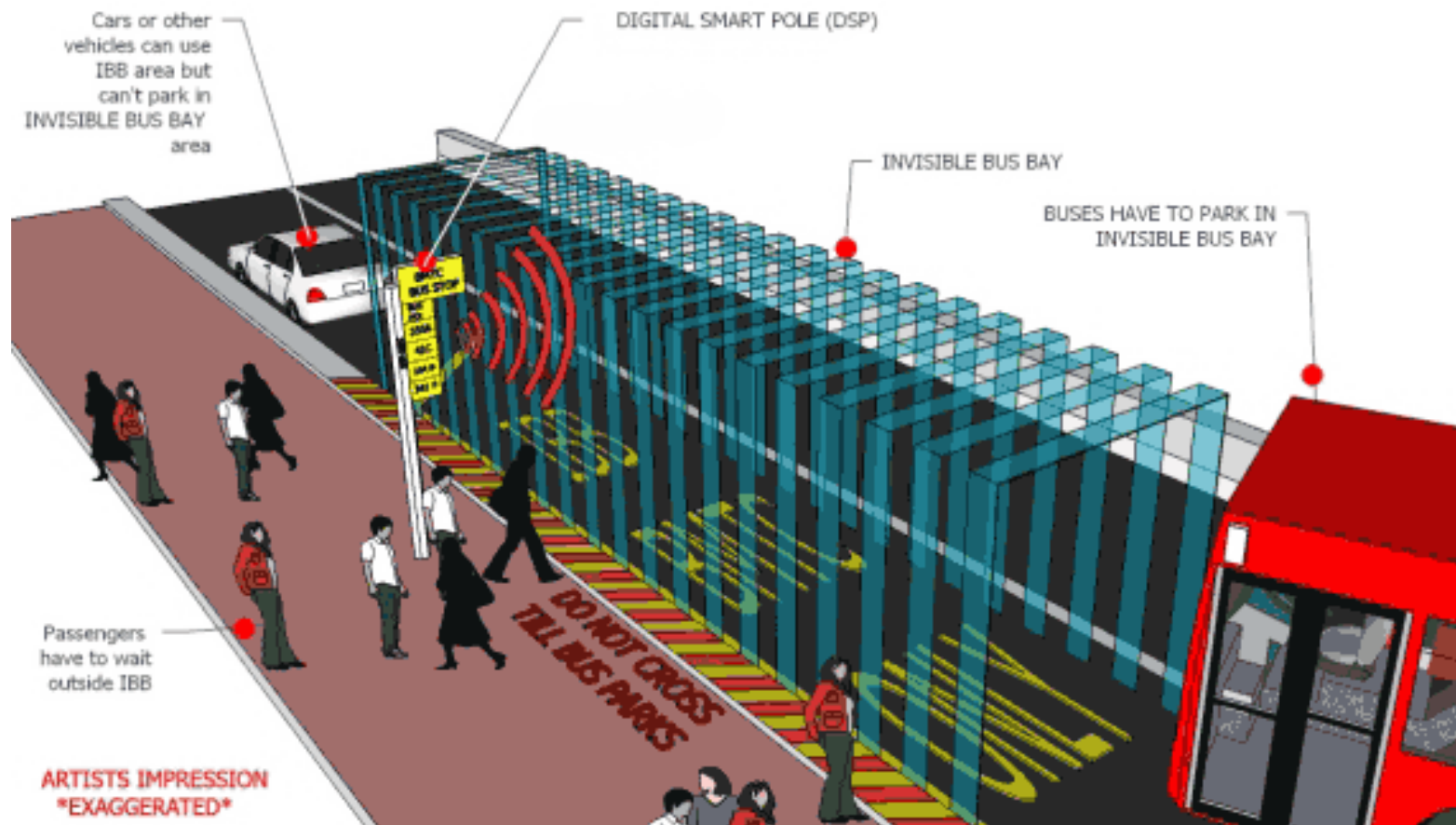




# Moovit, Israel



# Neosphere Invisible Bus Bay, India



## E2 Community Taxi, USA



[mobiprize.com](http://mobiprize.com)



**IS  
TRANSPORTATION  
AT A  
TIPPING POINT?**


[Watch](#)[Read](#)[Attend](#)[Participate](#)[About](#)[Log in](#)

Bill Ford:

# A future beyond traffic gridlock

TED2011 · 16:48 · Filmed Mar 2011

Subtitles available in 26 languages

 [View interactive transcript](#)



Watch later



Favorite



Download

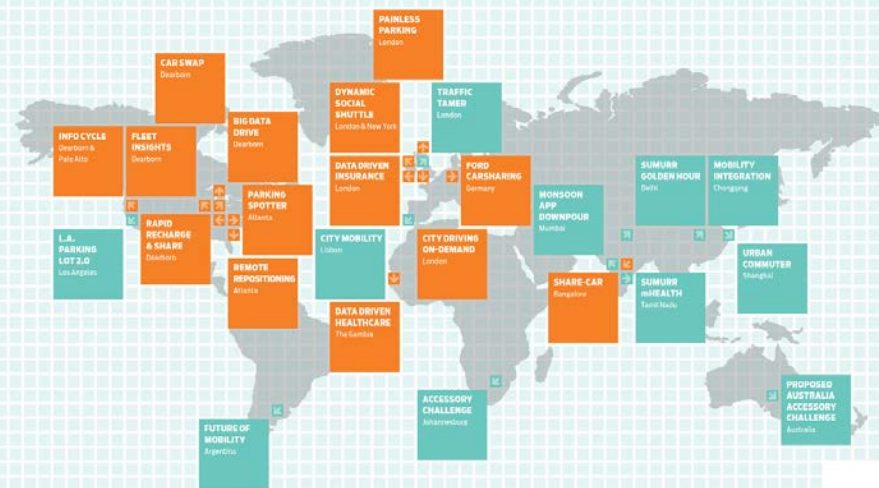


Rate



## FORD SMART MOBILITY

Ford Smart Mobility is a plan to use innovation to take Ford to the next level in connectivity, mobility and more. It begins with 25 mobility experiments and challenges across the globe to help change the way the world moves.



■ Experiments  
■ Innovate Mobility Challenge Series



City Driving On-Demand; Car Swap; Dynamic Social Shuttle; Share Car; Remote Positioning; Ford Carsharing; Painless Parking; Parking Spotter; Data Driven Insurance; Big Data Drive; Info Cycle; Fleet Insights; Rapid Recharge & Share; Data Driven Health Care; LA Parking Lot 2.0; Traffic Tamer; City Mobility; Future of Mobility; Accessory Challenge; Australia Accessory Challenge; Downpour Monsoon App; Sumurr Golden Hour & mHEALTH; Urban Commuter; Mobility Integration...



## Smart City Challenge Finalists



## The European Mobility as a Service Alliance

Working to create a seamless, demand-based travel experience

Launched at the 2015 ITS World Congress in Bordeaux

# IT'S TIME TO SPARK MEANINGFUL CHANGE

The India Smart Cities Challenge helps cities get smarter, faster.

# META TRANSFORMATION / STEP CHANGE:

## SYSTEMS OF SYSTEMS

- how we pull it all together
- with PEOPLE / THE USER at the core
- as well as the business, the city, the economy
- Multi-modal, multi-service
  - Door to door
  - Customized + On-demand
- Moving people, moving goods, even moving less

## AKA: MOBILITY-AS-A-SERVICE

**+** the industry cluster to supply it



**MONOCULTURE**





**MONOCULTURE**



**MULTI-MODAL**



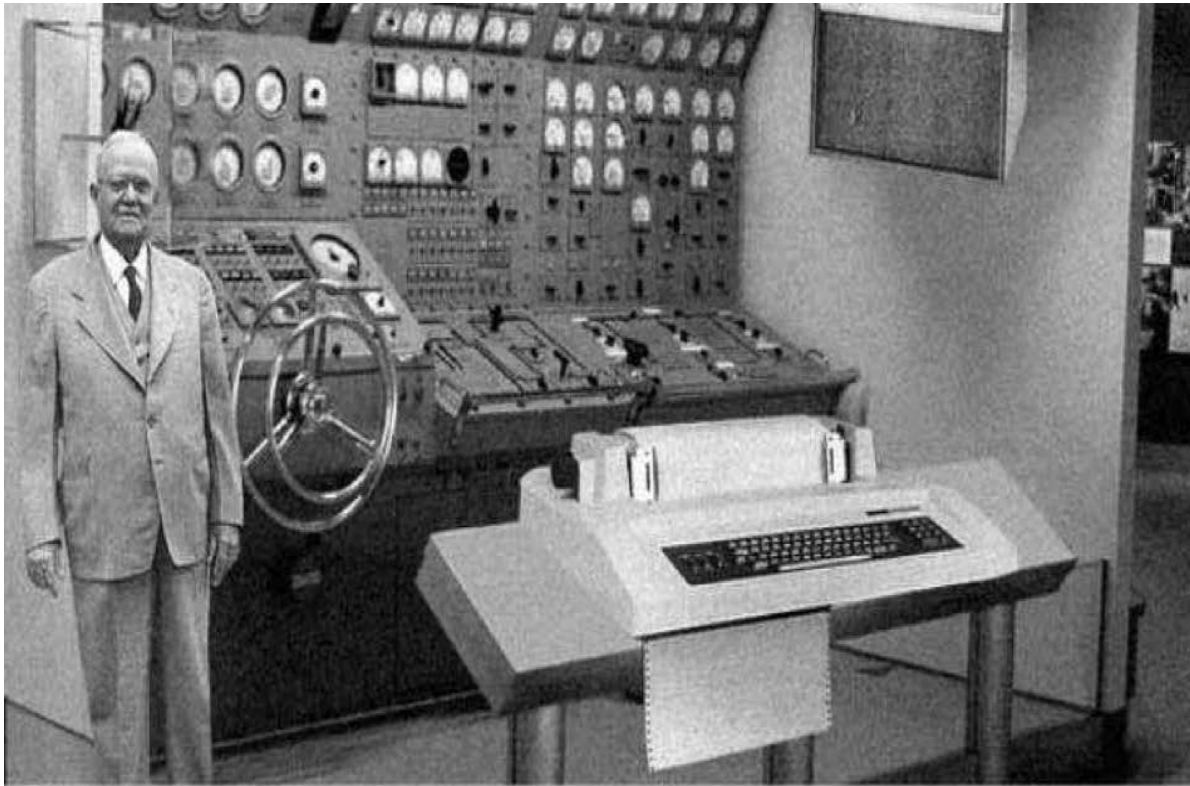


**Peter Newmann**

In ecological terms, it should come as no revelation that as cities grow and become more complex and diverse, they begin to create more efficiencies. Ecosystems grow from simple systems with a few pioneering species to more mature ecosystems with diversity and interconnection. Thus, after a fire or flood, or some other disturbance, a cleared piece of land will begin developing the structure of its ecosystem with an emphasis on rapid simple growth. After a period it becomes more diverse and more efficient as it establishes a more complex network of interactions.

PETER NEWMAN





**EVOLUTION - DIVERSIFICATION:**

**FROM MASSIVE MACHINE TO NIMBLE NETWORK**

**TRANSPORTATION IS FLAT – MORE OPTIONS, MORE CONNECTED**

**OPTIONS NOT ALTERNATIVES (Women are not Alternative Men)**

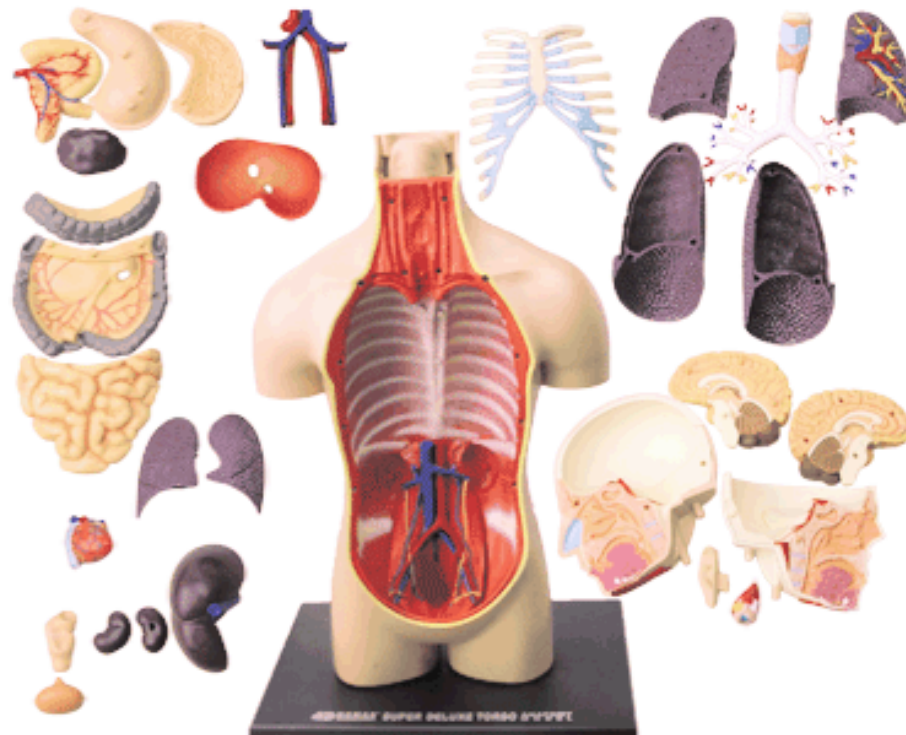


# **CONNECTED NETWORKS**

**OUR MAKER:**

**Heart? Lung?  
Pituitary Gland?**

**Which do you Choose?**







**THE WHOLE ENCHILADA**

# New Mobility is...Like the Ideal Life's Partner ...

## QUALITIES:

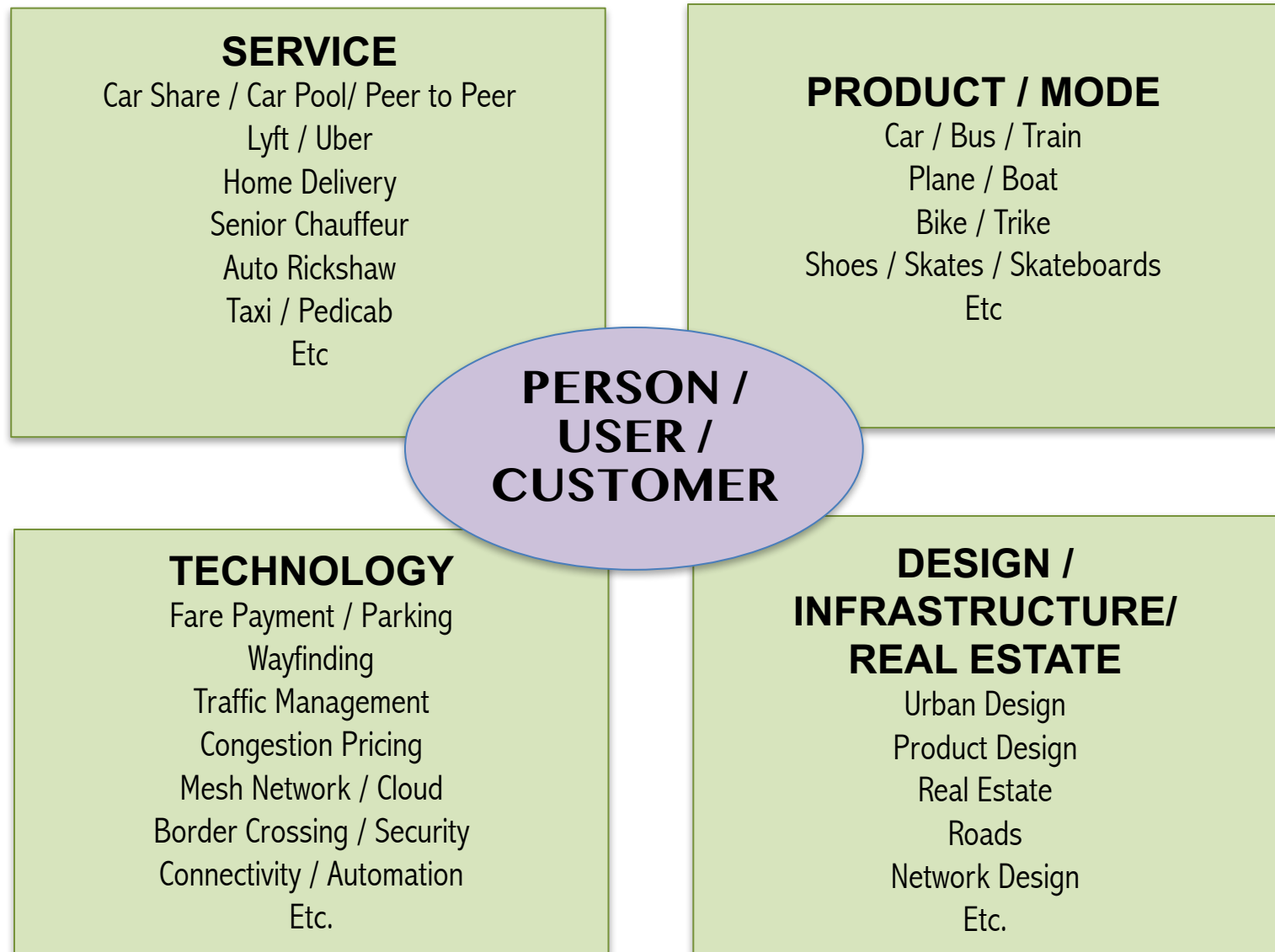
- ✓ Multi-talented
- ✓ Clean
- ✓ Connected
- ✓ Integrated
- ✓ Smart
- ✓ Tech savvy
- ✓ Sophisticated
- ✓ Confers status
- ✓ Convenient
- ✓ Sexy
- ✓ Innovative
- ✓ Saves money
- ✓ Socially equitable
- ✓ Service-oriented
- ✓ Creates jobs
- ✓ Caters to your needs
- ✓ Accessible to all



**What Might It Look Like?**



# IMPLEMENTATION: THE FOUR SOLITUDES



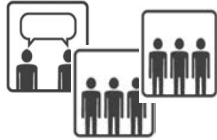
- ✓ New Integration Models
  - ✓ New Technologies
  - ✓ New Service Models
  - ✓ New Business Models
  - ✓ New Spatial Models
  - ✓ New Eco-Systems
- ✓ Public Private Innovation
  - ✓ New Skills & Jobs
  - ✓ New Policy Models
  - ✓ New Narratives

- ✓ Big Business
- ✓ Small Business
- ✓ Government
- ✓ Civil Society / NGO's
- ✓ Academe
- ✓ Citizens





# Mobility-As-A-SERVICE (MaaS)



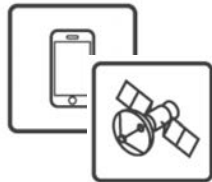
*Pulling it all together: Public Private Innovation advancing sustainable future mobility systems and the industries and enterprises to supply them*



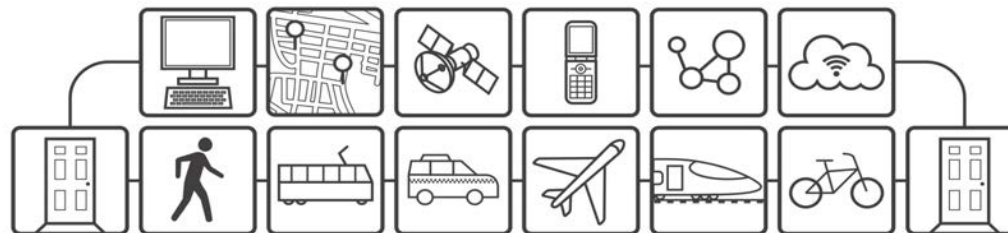
**BUSINESS MODELS**



**INNOVATION  
RESEARCH  
TECH TRANSFER  
CAPACITY BUILDING**



**ENABLING INFORMATION  
TECHNOLOGY**



... car share, bike share, transit, shuttle, taxi, informal, trains, boats, planes, connectivity, automation, parking, wayfinding, apps, traffic management, safety, security, measuring, monitoring, moving goods, tele-work, tele-other, sensing, marketing, tourism, learning, gaming, ...



**POLICY &  
LEGISLATION**



**PHYSICAL DESIGN,  
PLANNING  
INFRASTRUCTURE**



**SYSTEMS & PRODUCT  
OPTIMIZATION,  
ENGINEERING & DESIGN**



**MARKETING (DECISION  
MODELS, ATTITUDES,  
BEHAVIOR)**

**IT SEEMS COMPLICATED!**

**So WHY is this actually  
happening NOW?**

BECAUSE IT NEEDS TO

It is **ESSENTIAL** to:

- ✓ Community & Quality of Life
  - ✓ Health
  - ✓ Safety
  - ✓ Economy
  - ✓ Equity
  - ✓ Etc.





IT NEEDS TO ADDRESS PRESSING CHALLENGES – LOCAL + GLOBAL

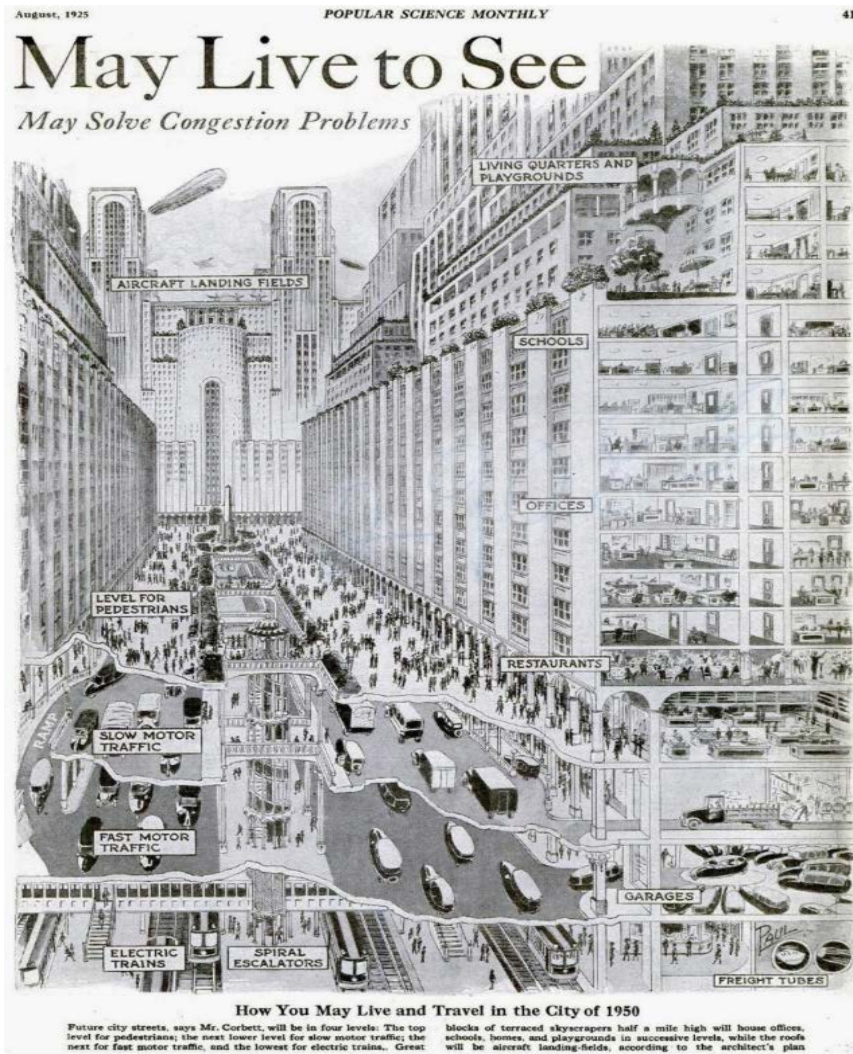


BECAUSE IT CAN

- ✓ The Cloud / Big Data
  - ✓ Way Finding Apps
  - ✓ Fare Payment Apps
  - ✓ Parking Apps
- ✓ Integrated Traffic Management Systems (cloud, mobile)
  - ✓ Shared Use
- ✓ Automation / self driving capabilities
  - ✓ Seamlessness
  - ✓ Safety
- ✓ Security + Cyber Security
- ✓ Energy monitoring & saving
  - ✓ Other



# PRE-DIGITAL CONTRAST



# BECAUSE IT'S COOL + SEXY + ON DEMAND

## The Washington Post

[NEWS](#) | [POLITICS](#) | [OPINIONS](#) | [BUSINESS](#) | [LOCAL](#) | [SPORTS](#) | [ARTS & LIVING](#) | [CARS](#) | [REAL ESTATE](#) | [SHOPPING](#)

More teens are choosing to wait to get driver's licenses

By Donna St. George  
Washington Post Staff Writer  
Sunday, January 24, 2010; A01

The quest to get a driver's license at 16 — long an American rite of passage— is on the wane among the digital generation, which no longer sees the family car as the end-all of social life.

The holdouts include Kat Velkoff, who turned 17 in Chantilly without a license. Focused on tough classes, the debate team, dance and color guard, she turned 18 without taking the wheel. Then 19.

"It just wasn't a priority," said Velkoff, who got her license last year at 20. "It was just never the next thing that needed to get done in my life."

[Federal data released Friday](#) underscore a striking national shift: 30.7 percent of 16-year-olds got their licenses in 2008, compared with 44.7 percent in 1988. The difference is even sharper in Virginia and Maryland, state figures show. Numbers from the District, which go back to 2003, show a decline in the past two years.

Advertisement

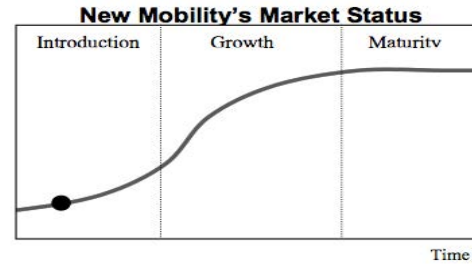


Hipster Clothing

MILLENNIALS & SHARED ECONOMY, & SOCIALNETWORKS

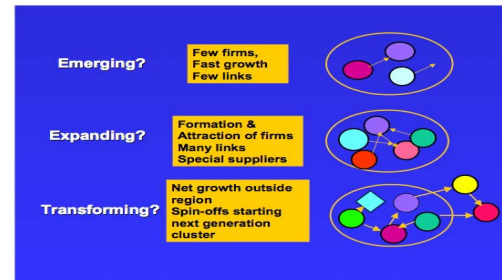
## Because it's **AN INVESTMENT** (not a cost)

- ❑ REGIONAL COMPETITIVENESS / PRODUCTIVITY
- ❑ SAVES MONEY (OPTIMIZATION)
- ❑ CREATES JOBS
- ❑ A WHOLE NEW MOBILITY INDUSTRY  
Multi-trillion \$ global market / industry cluster



**MULTI-TRILLION \$  
INDUSTRY**

Industry Cluster:  
Automotive; Transit;  
Energy; Real Estate; IT;  
Logistics; Planning &  
Architecture; Telematics;  
Retail; Tourism; etc...



## ENTERPRISE & TECH TRANSFER



*SMART MobiPrize*

### ENTREPRENEURSHIP & ENTERPRISE

Meeting customized local needs. Replicating and scaling globally. Catalyzing investment, building capacity.

## INDUSTRY MOBILIZATION

- Ford Motor
- Ashok Leyland
- Cisco Systems
- Michelin
- IBM
- Intel
- Infosys
- Mapunity
- Microsoft
- Qualcomm
- Siemens
- Velankani
- Veolia
- etc

BIG BUSINESS is transforming supply to meet emerging global market needs & opportunities.

## NEW MOBILITY INDUSTRY CLUSTER DEVELOPMENT

- Scotland
- Finland
- Sao Paulo
- Sweden
- Norway
- Austria
- Barcelona
- etc



# CURRENT META-PHENOMENA

- ❑ Change is changing faster
- ❑ Technology is outpacing policy
- ❑ We don't know what we don't know
  - ❑ We are all the deciders
    - ❑ It's an infinite game
    - ❑ It takes an eco-system

# SMART APPROACH

From Idea to Reality

A Simple Practical Exercise  
for Leaders





GLOBAL ECO-SYSTEM



## ADVANCING IMPLEMENTATION OF NEW MOBILITY SYSTEMS GLOBALLY

+ the industry + enterprise that supplies them)

### UNITED STATES

Ann Arbor MI  
Benton Harbor MI  
Dearborn MI  
Detroit MI  
Fort Bragg NC  
Greenville NC  
Mystic Connecticut  
Los Angeles CA  
Lansing MI  
Pasadena CA  
Portland OR  
Washington DC

### SOUTH AMERICA

Ermelino Matarazzo Brazil  
Quito Ecuador  
Rio De Janeiro Brazil  
Sao Paulo Brazil  
Santiago Chile

### ASIA

Bangalore India  
Beijing China  
Changwon Korea  
Chennai India  
Cochin India  
Delhi India  
Manila Philippines

### EUROPE

Muenster Germany  
Warsaw Poland

### AFRICA

Cape Town South Africa

PLATFORMS; TECH TRANSFER; RESEARCH; EDUCATION; GLOBAL LEARNING



## TYPICAL TRANSPORTATION MEETING



0:00 1:40 1:50 2:00

hours

Agenda: What Isn't Working

Solutions Laundry List

Jockeying, quick attempts at prioritization according to vested interests

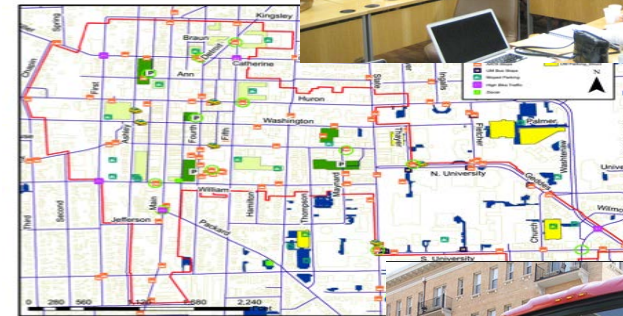
Adjourn

**Attendees:** Usual Suspects

# SMART SYSTEMS SESSIONS

## Multi-Modal System: Focus on People Door-to-Door

1. **CONVENING** – The Crucial & Often Under-Rated First Step  
(not just the usual suspects – public private innovation)
2. **MAPPING** – Engaging & Tangible Catalyst for Transformation
3. **PILOTING & ROLL-OUT** – Adapting, Scaling & Application
4. **MOVING MINDS** – A new language, a new narrative
5. (Bonus) **SMART NETWORK** for shared learning & action



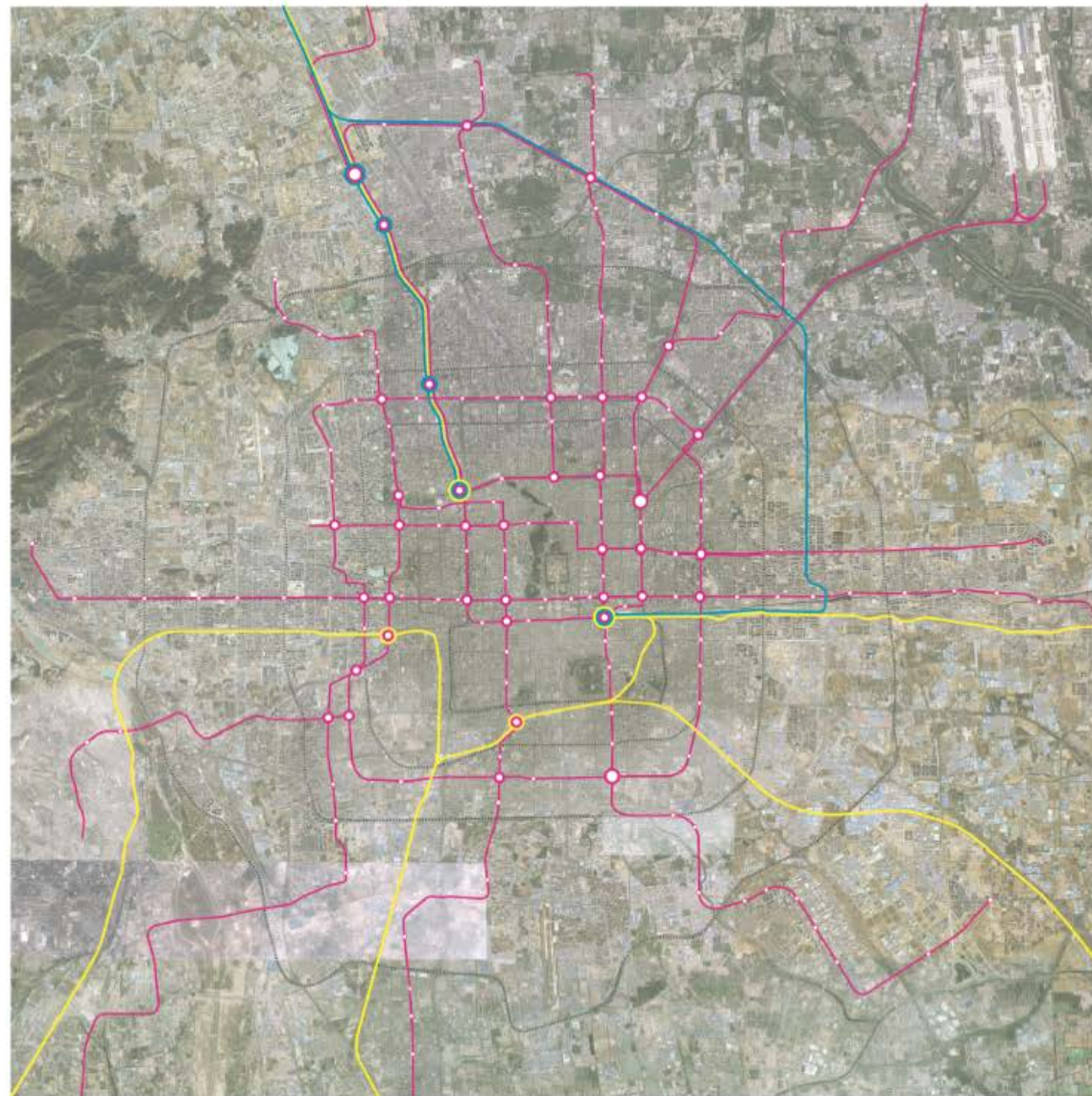


# CONVENING





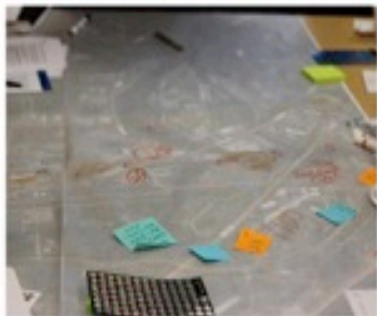
- Subway Station
  - Subway Transfer Station
  - Commuter Rail Station
  - Regional Rail Station
  - Subway
  - Commuter Rail
  - Regional Rail
  - Ring Road
- BEIJING, CHINA



Beijing  
Region



## MAPPING & IMPLEMENTING







BEIJING CHINA



LANSING MICHIGAN





## DETROIT REGION

- SMART Bus Stop
- DDOT Bus Stop
- People Mover Station
- M-1 Rail Line Proposed Station
- Car Sharing Location (ZipCar)
- SMART Bus Route
- DDOT Bus Route
- People Mover
- M-1 Rail Line (proposed)
- ..... Bicycle Path - Grade-Separated
- Bicycle Path - On-Street

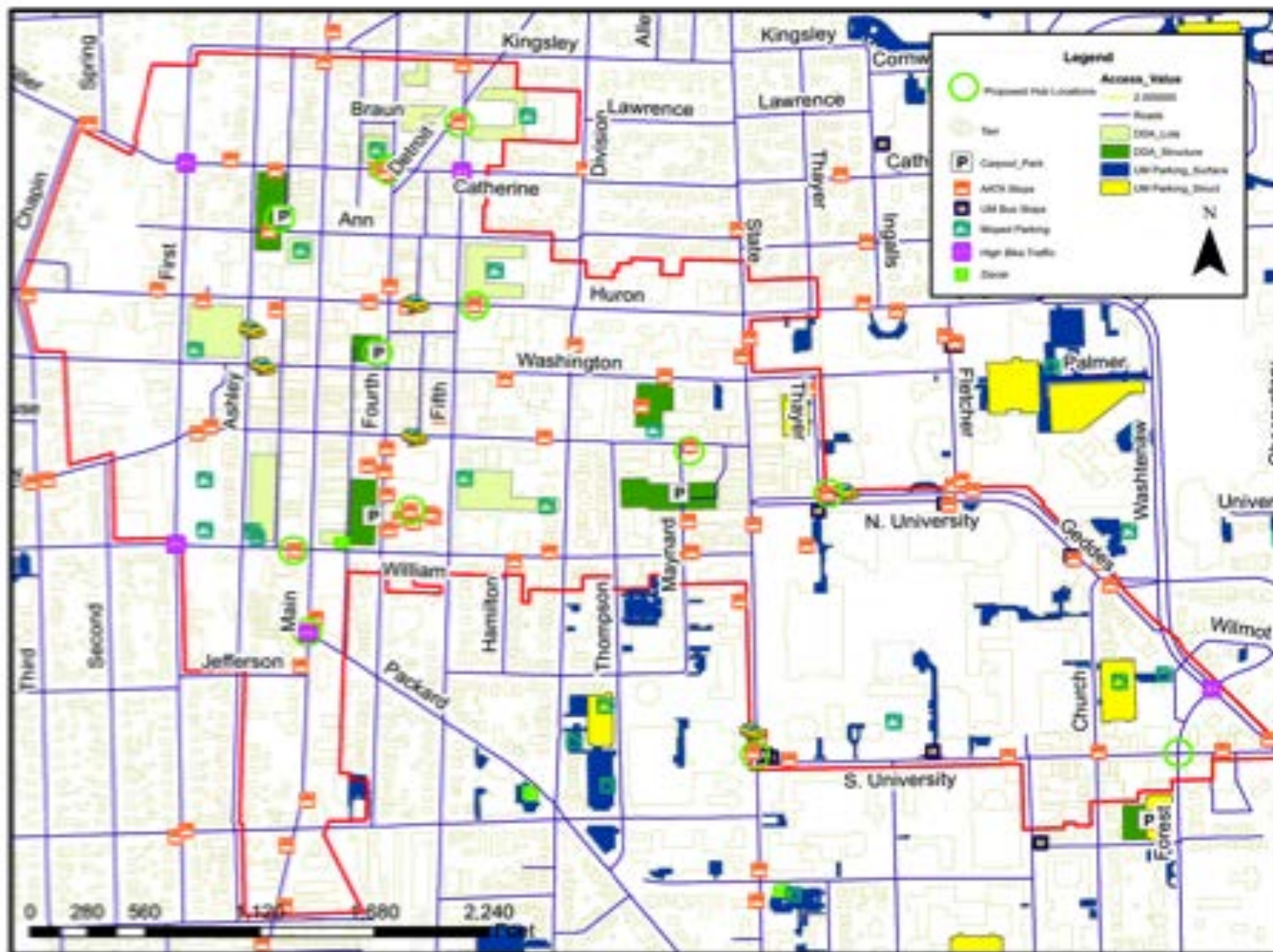
DETROIT, MICHIGAN

● SMART Bus Hub

● Transit Station

0 1/2 1/4  
MILE





ANN ARBOR MICHIGAN

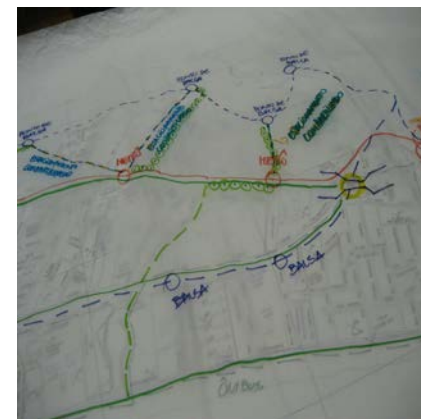


## METRO MANILA





# RIO DE JANEIRO







## COCHIN INDIA (quiet leapfrog)

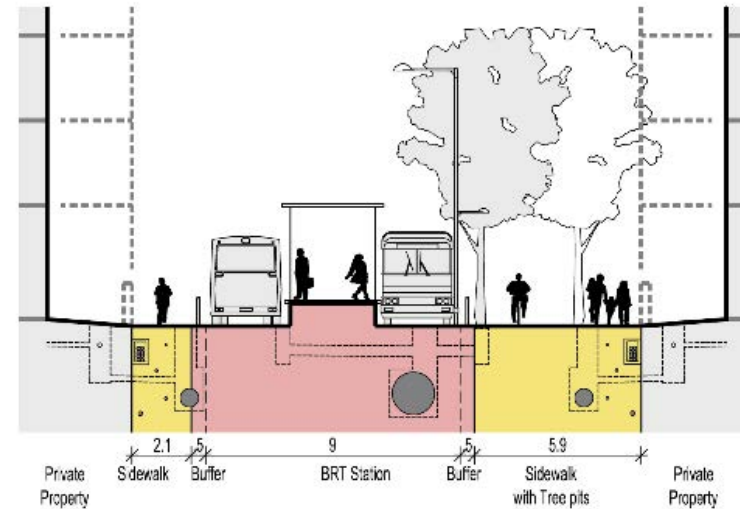
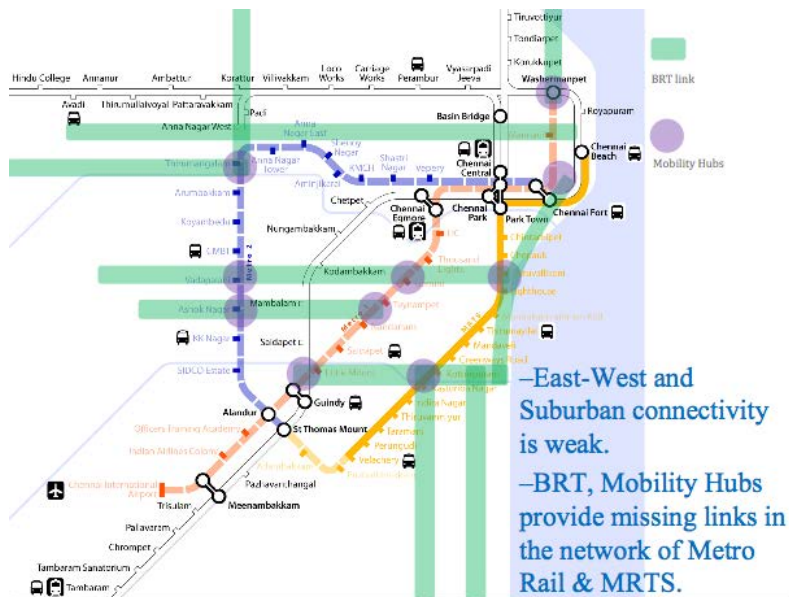
- ✓ Linking train, metro, bus, ferry, auto, parking, 2 wheelers
- ✓ Linked to commercial, entertainment, tourism, lifestyle
- ✓ 70% of people need not enter city (larger hubs gateways to grid of smaller connect points)
- ✓ Transform economy & lifestyle
- ✓ Sustainable – supported by real estate elements





WASHINGTON D.C.





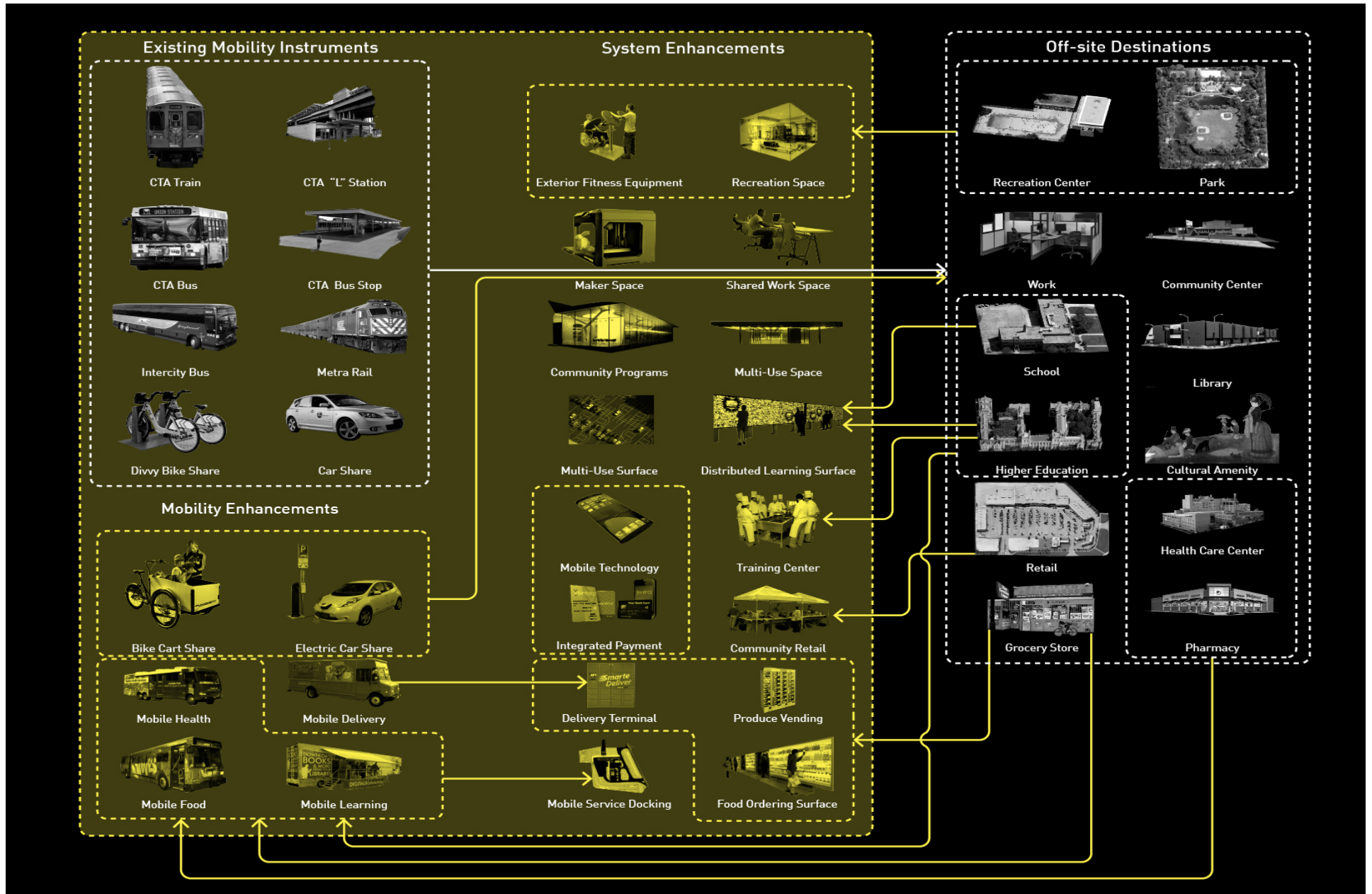
## CHENNAI, INDIA

Linking design, value capture, cycles, auto rickshaws, pedestrians, local business & new technologies (e.g. Mapunity, Cisco, Ashok, through CII)





# DESIGN PROTOTYPES

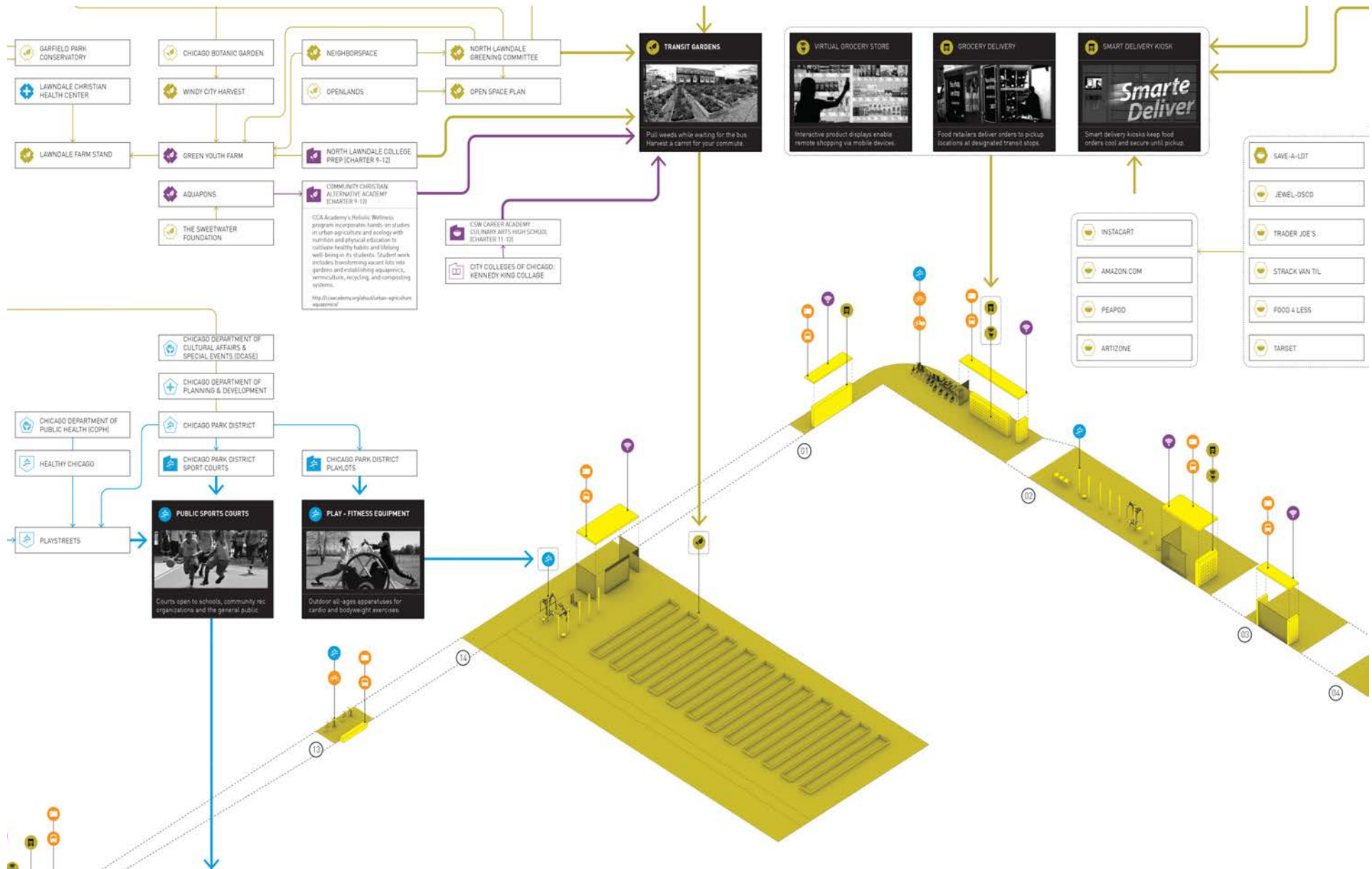


# DESIGN PROTOTYPES





# DESIGN PROTOTYPES





# DESIGN PROTOTYPES



## **ANTICIPATED & UNANTICIPATED BENEFITS**

Focus on people door to door  
Sparks both immediate & long term solutions  
Cost effective (by optimizing)  
Supports local employment & economic benefits  
Is sustainable  
Enhances Resilience  
Is not rocket science  
Reinforces the Local Mobility Eco-System  
(public-private innovation)  
etc.

- ✓ New Integration Models
  - ✓ New Technologies
  - ✓ New Service Models
  - ✓ New Business Models
  - ✓ New Spatial Models
  - ✓ New Eco-Systems
- ✓ Public Private Innovation
  - ✓ New Skills & Jobs
  - ✓ New Policy Models
  - ✓ New Narratives



# **IMPLICATIONS FOR HEALTH AND MOBILITY**

**(WRIT LARGE)**

**More than meets the eye**

(beyond NOX, VOX, SOX, CO2, water etc.

to embrace obesity, health access, demographics, job access, QoL, noise, safety, security, social net...)

**More than Moving People –**

also GOODS and LESS

**It's about the SYSTEM not just the vehicle or technology**

(Chinese medicine; Syllogism)

**It's about the user not the technology**

(Use cases door to door; ends + means)

**Connected Solutions take a village**

(of sectors and players and citizens)

# **ENDS & MEANS**

(a cautionary note)

**Ends = Goals (the Light)**

HEALTH; Quality of Life; Access to Needs;  
Sustainable Environment;  
Equitable Society; Vital Economy etc.

**Means = Enablers (the Lightbulb)**

Mobility; Technology; Business Models; Physical  
Planning; Policy; Marketing; Culture etc.

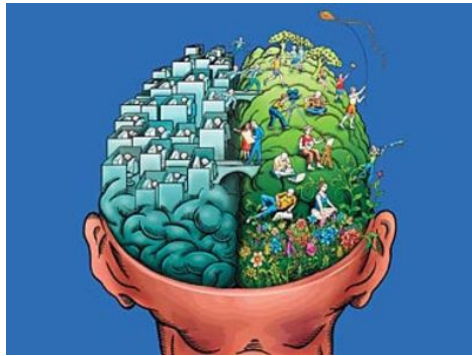
# NEW NARRATIVES

For People / Users / Customers  
For Decision Makers

Inform Responsive Innovation:  
Design & Delivery

Inform Marketing





MOVING MINDS:  
THE FUTURE:  
PREDICTION  
OR CREATION?



# **IMPORTANT NEXT STEPS: For Health AND Mobility**

Connect the Dots

Move the Economy

Move Minds

(Together -- Carpe Diem!)